BY **JANI KYLMÄAHO,** THE NATIONAL LAND SURVEY OF FINLAND

Oskari brings maps to your website without programming

▶ Oskari software makes the utilization of distributed SDI easier and more efficient.

Spatial data and maps are integral parts of many modern web services. While many applications still today use centrally stored data, an increasing amount of important and interesting data sources are being made available via various kind of spatial data infrastructures.

Oskari has been developed to make utilization of distributed spatial data infrastructure (SDI) easier and more efficient. Even standards-based SDIs like the European INSPIRE can be difficult to take advantage of. Simultaneously, pressure is increasing to save costs, introduce eGovernment services and gain benefits from the investment made in INSPIRE. Oskari leverages on the existing and developing distributed SDIs and provides means to create new, innovative web services even without programming skills. It is mainly used in information services and various kinds of eGovernment services, including innovative ones where the map fluently interacts with other parts of the service.

Once Oskari has been set up and data sources connected, it is very easy to create embedded maps to other websites using the provided WYSIWYG wizard. No programming is necessary – simply select the map layers and the tools you want to make available for the map user. The resulting map client can be embedded in any website by copy-pasting the HTML snippet provided by the wizard.

Streaming data from the original source

Standard OGC interfaces, such as WMS, WMTS or WFS, can be utilized as data sources. INSPIRE schemas for various themes are supported. In addition, you can upload your own data in shape file, GPX, KMZ or MapInfo formats to complete the data offering. The map data is streamed from the original source, so it always remains as up-to-date as possible. The map client loads to user's browser from the Oskari server as SAAS (Software as a Service), so any software updates are instantly in use after they have been deployed. ▶▶▶

PHOTOS: RIKU NIKKILÄ

BY **RINA TAMMISTO**, STATISTICS FINLAND

Open Statistics meets Oskari

▶ The Finnish national geoportal created by the National Land Survey of Finland has clearly achieved the level where the joy of seeing data has turned into a need to use data in various kinds of analyses.

Along with visualising geospatial data and spatial statistics as maps, there is also a need to have access to pure statistics and to visualise data as graphics and data tables.

Statistics Finland has published the datasets obliged by the INSPIRE directive as open data (*http://tilastokeskus.fi/tup/rajapintapalvelut/index_en.html*). These are published among other spatial datasets on the Oskari-based national geoportal. The PSI directive of EU and national open data policy in Finland have increased vast data reserves of additional open statistical data.

The datasets published concern, among other themes, population distribution. At the most accurate level, population has been aggregated to a grid of 1 km^2 cell size. Along with spatial statistical datasets, boundaries of statistical areas have been published as open data, and population data is available also for these statistical areas. Oskari geoportal uses WFS/WMS interfaces offered by Statistics Finland, and the data are viewable or downloadable by requests.

Tools for using open statistical data

Statistics Finland and the National Land Survey of Finland run a joint EU granted project Spatial Statistics on Web (SSW). The project is to develop tools for using open spatial statistical data, especially gridded data, on Oskari-based map applications. During the project in 2014 – 2015, spatial analysis tools have been created.

Users can filter or select gridded data by existing or free-drawn areas. Reports of statistical key figures of the selected areas or themes can be computed. Users can make buffers around selected targets and get a summary of the statistical figures by the created zones, and moreover, users can divide the buffer zones in a selected number of sectors for more precise figures. Gridded datasets of two different dates can be compared and the change over time can be calculated. The analysis tools are still under development in the national geoportal. ▶▶▶

Interactive services can easily be developed on top of embedded maps with the help of Oskari's RPC interface. It enables communication between the map client and the embedding website. For example, the user can click on the map and the coordinates or the address can be populated on a form on the webpage. The user may make selections on the website, and data related to the selection is instantly displayed on the map.

Thematic mapping

Advanced features of Oskari include thematic mapping based on statistical data as well as various spatial analysis functions, which are currently in beta phase. Thematic maps and the results of the analyses can already be published as embedded maps.

One of the key success factors of Oskari is the project's flexible open source licensing policy. Users can choose between EUPL and MIT licensing, so both public sector organizations and private companies can use the software as they see fit best for their needs.

Oskari is being used both in national and international projects. International cases include the Arctic SDI and European Location Framework (E.L.F.) initiatives. In the previous one, Oskari is deployed as a geoportal for disseminating thematic data related to the arctic region in a co-operation effort of the circumpolar nations. In the latter, the Oskari-based ELF Showcase application provides access to harmonized data across Europe. To facilitate these cases, Oskari user interface will support all major European languages.

Co-operation around Oskari in Finland is organized through the Oskari network. The network coordinates the development of the open source project and has 27 memberships from both public sector institutions and private companies. A product lifecycle management plan has been developed to support the activities around Oskari.

OSKARI IN BRIEF
- ▶ Connects to distributed SDI data sources
- ▶ Supports major OGC standard interfaces
- ▶ WYSIWYG embedded maps wizard
- ▶ Open source with MIT/EUPL dual licensing
- ▶ Oskari network coordinates the software development
- ▶ More information: **www.oskari.org/oskari**

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Direct access to statistical data resources needed

According to a user survey, users of the national geoportal tend to be quite content with the service while professionals working with statistical data seem to have less benefit of its usage. This came up in the project Map Service for Knowledge management (*http://julkictlab.fi/en/pilot-projects/map-service-for-knowledge-management/*). In the project, municipal and ministerial professionals were interviewed and it came out that the professionals working with statistical data only got half way in their work with the data included in the national geoportal. Direct access to statistical data resources, data mining, and interoperability with geospatial data and spatial statistics were needed. These items require development on the Oskari platform, but even more development is needed on the data structure of statistical data.

INSPIRE type development on the structure of data and interface services would be required also for statistical data offered on the open service interfaces. Lack of specifications makes statistical data bulk with little intelligence. To be more usable, the data should be structured in a standardised way, and it should have links to other data that explain the data themselves and their relations to other data. When properly structured, data can be found, machine-read, combined, and compared.

Statistics Finland has produced metadata for the datasets and services obliged by INSPIRE. However, concerning the capability to describe statistics, INSPIRE metadata descriptions are quite inadequate. The schema does not allow descriptions of statistical variables. Supplementing metadata is needed to cover all spatial statistical data. For pure statistical data there is no fixed way to offer metadata of statistics or statistics on a service interface. It is highly significant that when these standards and data specifications for statistical data are developed, consistency with INSPIRE specifications is taken into account.

A method to link statistics and geospatial data and metadata may, however, be on its way. Data compliant with the INSPIRE specifications are to be produced between 2017 and 2020. In those data specifications producers are introduced to unified identifiers. By them, objects are not only identified but relations between them are also recognisable, describable and linkable. For statistical data, unique identifiers would be needed for indicating statistical themes, statistical variables and classifications used in statistics – and, of course, for links to geospatial data.

A uniform structure describing the consistency of geospatial data, spatial statistics and statistics would create interoperability between datasets. It would allow fixed solutions in application design and assist further development for Oskari to meet the needs of decision-makers better.

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